

REMARKS

Claims 1-9 and 17-19 are now pending in this application. Claims 1, 5, 8, and 17 have been amended. Claims 10-16 stand withdrawn as a result of Applicants' election, with traverse, from the Restriction Requirement dated September 23, 2003; Applicants have herein canceled those claims. Applicants appreciate the Examiner's indication that claim 9 is allowable if rewritten in independent form and agree with the Statement of Reasons for the Indication of Allowable Subject Matter at § 6 of the Office Action. However, Applicants decline the Examiner's invitation to accept only claim 9 and instead present the following arguments as to the patentability of all the pending claims.

Claim Amendments

Applicants have amended claims 1 and 17 to recite that the broad walls of the microwave waveguide comprise a slot at least partially off-center. Support for this amendment is provided in the original specification in at least paragraph [0113] and Figures 19-21. In particular, paragraph [0113] describes slots "not necessarily along the centerline" (as shown, for example, in Figures 20-21), and specifically describes starting the slot off-center and gradually bringing it to toward the center (as shown, for example, in Figure 19). Further, the slot shown in Figures 20 and 21 is on-center at one point yet embodies one example of a slot "at least partially off-center." Figure 2 also shows one embodiment of a slot that is at least partially non-centerline or off-center slot. Each of these descriptions and Figures provide support for broad walls comprising "a slot at least partially off-center." As a result, Applicants submit that these amendments add no new matter to the specification and respectfully request that they be entered.

Applicants have also amended claims 5 and 8 only to conform the language of these claims to the other pending claims. As such, Applicants have added no new matter to these claims and request that the changes be entered.

Finally, solely in an effort to advance the prosecution of this application, Applicants have canceled withdrawn claims 10-16, directed to a method of web heating or drying, without prejudice to their introduction in a later-filed application.

35 U.S.C. § 102(b) Rejection over Parker

The Examiner rejects claims 1, 3, 6-8, 17, and 19 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 3,474,209 to Parker. The Examiner believes that the reference teaches a dielectric heater having a waveguide with a non-linear profile comprising broad walls that are separated by and electromagnetically coupled with at least one narrow wall. Applicants respectfully traverse this rejection.

Parker discloses a “waveguide having a properly designed non-linear taper along one dimension thereof” into which microwave energy is launched, providing “a uniform amount of heating at every point within the waveguide wherein the product is situated” (col. 2, lines 9-20). In Figure 1, the product 18 moves along the centerline of the waveguide, which is where Figure 2 displays an E_m or maximum microwave energy field for heating and drying. Figure 5 also shows a product moving along the centerline of the waveguide. In fact, the waveguide of Parker is specifically designed to provide maximum power at the centerline of the waveguide (see col. 4, lines 7-11).

A single reference must expressly or inherently describe each and every element in order to anticipate the pending claims (see MPEP § 2131). Both independent claims

1 and 17, as amended, recite broad walls comprising a slot at least partially off-center. With its configuration specifically designed for maximum power at the centerline, the waveguide of Parker does not describe a slot at least partially off-center. An off-center slot would expose the product to non-uniform, non-maximum heating and upset the calculations that Parker provides to determine the shape of the waveguide (see col. 5, line 5 to col. 6, line 14). Because it does not describe the recited at least partially off-center slot, Applicants assert that Parker cannot serve to anticipate the pending claims and respectfully request that the Examiner withdraw the rejection.

In addition, Parker cannot serve to render obvious the pending claims, either by itself or in combination with any other cited references. To prove a *prima facie* case of obviousness, the Examiner must show that the cited reference provides to one of ordinary skill in the art some suggestion or motivation to combine or modify their teachings in an effort to achieve all of the limitations of the claimed invention, with a reasonable expectation of success. See MPEP § 2143. As discussed above, Parker depends upon its on-center slot configuration, along with the calculations to determine the waveguide shape, to achieve maximum field strength in the same plane as the product. In light of these constraints, one of ordinary skill would not be motivated to modify this teaching and shift any broad wall that may be present slot even slightly off-center. Moreover, the strength of Parker's disclosure, the specificity of its calculations, and the persistence in achieving a maximum energy field on the center plane of the waveguide would lead a skilled artisan away from combining that reference with any other disclosure that may suggest an off-center slot alignment. In this way any change in Parker's slot position, or the position of the product in the waveguide, would not only

change its principle of operation but also render it unsatisfactory for its intended purpose by exposing the product to non-uniform, non-maximum heating (see MPEP § 2143.01). As such, Parker cannot serve to render obvious the pending claims because it does not teach or suggest broad walls with a slot at least partially off center, either independently or in combination with other references.

35 U.S.C. § 102(b) Rejection over Sale

The Examiner rejects claims 1-8 and 7-19 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 3,110,794 to Sale. The Examiner believes that the reference teaches a microwave waveguide apparatus comprising broad walls separated by and electromagnetically coupled with at least one field modifier with a non-linear profile. Applicants respectfully traverse this rejection.

According to Figure 1, Sale discloses a waveguide 1 with two U-shaped limbs that join at flares 3 (see col. 1, lines 59-63). The flare has an open-ended aperture 3a defined by extremities 13 and the edges 10 and 10' forms by lips 15 and 15' (see Figure 4; lines 6-22). A product passes along a conveyor belt 4 through a channel 7 between the pair of flares 3 so that it is exposed to microwave energy (see col. 1, lines 63-70).

Quite differently, the present invention allows a product to pass through the waveguide through a slot in the broad walls. Throughout the specification, the “broad walls” are defined as containing a slot through which the product would pass for exposure to microwave energy. See paragraphs [04], [039]-[041], and [0113]. Without the addition of prohibited new matter, claims 1 and 17 have been amended herein to clarify that the broad walls comprise such a slot.

The “broad walls” noted by the Examiner (see Office Action at § 4) are actually the empty space of the aperture 3a through which the microwaves pass towards the conveyor belt 4. Moreover, the “field modifier” 15 is actually a pair of lips that define the size and shape of the aperture 3a. As such, they cannot separate and be electromagnetically coupled with the broad walls since they are in the same plane with the “broad walls” noted by the Examiner. Furthermore, even if the Examiner considers the lips 15 to be broad walls and the flare wall 9 to be an at least one field modifier, the flare wall of Figure 4 does not have a nonlinear profile, as would be required by the pending claims. And Figure 3 contains no lips 15 but only an aperture 3a; thus, that flare has no “broad walls” at all.

Moreover, the waveguide and flares disclosed by Sale are simply not designed to allow a product to pass through a slot in any “broad walls.” Instead, the product passes through a plane parallel to the aperture so that it is exposed to microwaves traveling down the length and out of the flare. Thus, Sale does not disclose a slot as recited in the pending claims, let alone broad walls comprising a slot.

Sale discloses neither broad walls nor a slot at least partially off-center and, as such, cannot serve to anticipate the pending claims (see MPEP § 2131). Therefore, Applicants respectfully request that the Examiner withdraw this rejection.

In addition, Sale cannot serve to render obvious the pending claims, either by itself or in combination with any other cited references. As discussed above, Sale’s setup, method of operation, and intended purpose are quite different from the microwave waveguide of the pending claims. Any modification of its disclosure to include broad walls, broad walls with a slot, or broad walls with a slot at least partially

off-center, would dramatically alter its principle of operation. By splitting microwaves from a waveguide 1 with the T-junction 2 and directing them towards flares 3, the invention aims two separate microwave sources at the top and bottom of any product on conveyor belt 4 enclosed in a channel 7 (see col. 1, lines 59-70). Sale simply does not contemplate a slot in any waveguide, let alone a slot at least partially off-center, due to the specificity of its teachings to allow above and below microwave heating from different sources. A skilled artisan would recognize any attempt to add features from the pending claims to the invention of Sale would completely alter its principle of operation (see MPEP § 2143.01), if not be completely unworkable given that disclosure's configuration and design. As such, Sale cannot serve to render obvious the pending claims because it does not teach or suggest broad walls with a slot at least partially off center, nor can it support any combination with other references.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and the continued examination of this application and the timely allowance of the pending claims. In the event that these amendments and remarks do not place the pending claims in condition for allowance, Applicants invite the Examiner to contact the undersigned at to discuss an appropriate resolution and advance the prosecution of this application.

Please grant any extensions of time required to enter this response and charge
any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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